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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/641,705	08/15/2003	Can Erkey	UCT-0037	9966

23413 7590 04/08/2005

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EXAMINER

WITHERSPOON, SIKARL A

ART UNIT PAPER NUMBER

1621

DATE MAILED: 04/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/641,705

Applicant(s)

ERKEY ET AL.

Examiner

Sikarl A. Witherspoon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 is/are allowed.
- 6) ☒ Claim(s) 2-34 and 36-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The examiner has considered applicants' amendment filed January 14, 2005, and the remarks/arguments therein. The amendment does not place the claims in condition for allowance, and as such, the following rejections have been maintained and rewritten to add claims newly added with the instant amendment.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-34 and 36-44 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a catalytic process, wherein an olefin is hydroformylated by the reaction of the olefin with hydrogen and carbon monoxide, and an organometallic catalyst, in a microemulsion further comprising water, a densified fluid, and a surfactant, to form a hydroformylation product, does not reasonably provide enablement for conducting *any* catalytic process that forms a product in a microemulsion, as suggested by the breadth of the instant claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. Accordingly, the examiner purports that it would constitute undue experimentation to determine what types of catalytic processes, as well as what types of reactants can be

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effectively employed in order to conduct a catalytic process as per the parameters of the instant claims.

There are eight (8) factors considered by the Federal Circuit in the determination of undue experimentation, *In re Wands*, 8 USPQ2d 1400 (1988). These factors are: the nature of the invention, the breadth of the claims, the state of the prior art, the predictability or unpredictability of the art, the amount of direction or guidance presented, the presence or absence of working examples, the relative skill of those in the art, and the quantity of experimentation necessary. The examiner will discuss these factors as they apply to the instant invention.

*Nature of the invention.* The present invention is drawn to a catalytic process, wherein a reactant is reacted with an organometallic catalyst to form a product in a microemulsion comprising the reactant and the organometallic catalyst, and further comprising water, a densified fluid, and a surfactant.

*Breadth of claims.* Independent claims 17, 18, 27, 33, and 34 are extremely broad in that they attempt to encompass any and all catalytic processes that can form a product in a microemulsion as described above; however, since no structure or name is provided for the reactants (or product) of said catalytic process, a catalytic process wherein a product is formed in a microemulsion can be applied to a great many catalytic processes.

*State of the prior art.* It is known in the prior art that catalytic processes, such as hydroformylation reactions, can be conducted such that the product is formed in a

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microemulsion system, and that by adopting a microemulsion system for catalytic processes, extremely mild conditions can be employed.

*Predictability of the art.* Catalysts, and catalytic processes are unpredictable. Some catalysts and catalytic processes are substrate specific, some are reaction specific, and others are both reaction and substrate specific. Reaction conditions that are known to be effective for producing desirable results in one type of catalytic process may not be effective in other types of processes.

*Amount of guidance present.* The instant disclosure provides guidance for a catalytic process that comprises the reaction of an olefin, hydrogen, carbon monoxide, and an organometallic catalyst in a microemulsion further comprising water, a densified fluid, and a surfactant, i.e., a hydroformylation process, to produce a product in a microemulsion. However, the specification does not provide any guidance as it pertains to any other type of catalytic process, such as, hydrogenation, halogenation, carboxylation, hydrocyanation, isomerization, esterification, etc., as recited in the instant claims (claim 23 specifically).

*Presence of working examples.* The specification provides several working examples; however, all of the examples are geared to catalytic hydroformylation reactions.

*Relative skill of those in the art.* A person of ordinary skill in the art would recognize the types of catalytic processes that can be conducted under such conditions so as to produce a product in a microemulsion system. However, it would confound the person of ordinary skill as to what types of catalytic processes would function in the

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manner described in the instant claim(s); for example, what type of process, and what reactants, and under what conditions, can a catalytic process be conducted in order to effectively produce a product in a microemulsion, such as that which is described in the instant claims, i.e., comprising water, a densified fluid, and a surfactant.

*Quantity of experimentation necessary.* The quantity of experimentation required of a person having ordinary skill in the art could potentially be infinite without further guidance. As stated above, catalysts and catalytic processes are unpredictable, and their effectiveness may depend on the reaction substrate(s), reaction conditions, i.e., the type of reaction itself, or a combination of both. Without further guidance, a person of ordinary skill would have to experiment with many different types of catalytic processes, experimenting with different types of compounds as reactant, possibly employing many different organometallic catalysts, to determine which catalytic processes, and which reactants can produce a product in a microemulsion, as per the instant invention. All these elements taken into consideration make the experimentation unduly burdensome.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-34 and 36-44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The instant claims are drawn to a catalytic process wherein a reactant is reacted with an organometallic compound to form a product in a microemulsion. However, the claims do not recite what type of catalytic process is being conducted, nor do the claims recite a name or structure of the possible reactants, or a name or structure of a product that is being made; as such, the claims are found indefinite.

### ***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter: claim 35 is allowable for the reason already set forth in the Office Action mailed to applicants on July 2, 2004.

### ***Response to Arguments***

Applicant's arguments filed January 14, 2005 have been fully considered but they are not persuasive. The thrust of applicants' arguments is that their claims do not require undue experimentation and are therefore not invalid for lack of enablement under 35 U.S.C. 112, first paragraph. This position is based on applicants assertion that their claims to a *catalytic process* in water-in-densified fluid microemulsion specifies the use of a surfactant, and organometallic catalyst, and a microemulsion pH of 2 to about 8; therefore, applicants assert that one of ordinary skill in the art would be able to *select* operative embodiments and avoid inoperative embodiments encompassed by the pending claims.

The examiner respectfully disagrees with applicants' position. For one, as stated in the rejection above, applicants do not recite any reactants or products by name and/or structure. While applicants' claims specify that an organometallic catalyst is employed, neither the claims, nor the specification recite what the structure and/or name of such an organometallic catalyst is, as there are many such catalysts that fall under the category of an organometallic catalyst. Therefore, a person of ordinary skill would have to first, decide on what type of process to pursue, i.e., a hydroformylation, oxidation, esterification, olefin metathesis, etc., choose from among many possible reactants, choose a specific surfactant, from many possible surfactants (to form a microemulsion), and then choose an organometallic catalyst. While the examiner agrees that a certain amount of experimentation may be viewed as routine, the examiner purports that without further guidance from applicants, it would constitute *undue* experimentation for a person of ordinary skill in the art to pick and choose between various types of reactions, various possible reactants, various surfactants, and various organometallic catalysts, in attempting to practice the catalytic process of the present invention, wherein a *reactant* is reacted with an organometallic catalyst to form a *product* in a microemulsion.

Applicants agreed with the examiner that catalysis in water-in-carbon dioxide microemulsions is known (US 5,814,678); however, applicants then stated that they are unaware of any pertinent reference, other than those authored by the instant inventors, describing microemulsion catalysis of hydroformylation. The examiner asserts that applicants' statement herein provides support for the examiner's position. If applicants



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do not believe such a process as microemulsion catalysis of hydroformylation to be known, then any experimentation without further guidance than that which is provided in the instant specification would constitute undue experimentation.

For the same reasons, the examiner asserts that the rejection of record under 35 U.S.C. second paragraph is proper. In contrast to applicants' position that one of ordinary skill in the art can tell with "reasonable certainty" whether his or her conduct is outside the scope of applicants' claims, without guidance as to the specific catalytic process being conducted and reactants being employed, the examiner believes that it would be confounding to one of ordinary skill in attempting to ascertain what conduct would be outside the scope of applicants' claims; as stated in the rejection above, the absence of a recitation of the type of catalytic process claimed, and/or reactants employed, the claims are indefinite.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikarl A. Witherspoon whose telephone number is 571-272-0649. The examiner can normally be reached on M-F 8:30-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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